



ONET2804T 28 Gbps 4-Channel Limiting TIA

1 Features

- 4-Channel Multi-Rate operation up to 28 Gbps
- 10 k Ω Differential Transimpedance
- 21 GHz Bandwidth
- Programmable Output Voltage
- Adjustable Gain and Bandwidth
- Received Signal Strength Indicator (RSSI) for each Channel
- Single 3.3 V Supply
- Pad Control or 2-Wire Control
- On Chip Filter Capacitors
- –40°C to 100°C Operation
- Die Size: 3250 μm \times 1450 μm , 750 μm Channel Pitch

2 Applications

- 100 Gigabit Ethernet Optical Receivers
- ITU OTL4.4
- CFP2, CFP4, and QSFP28 Modules with Internal Retiming

3 Description

The ONET2804T is a high gain limiting transimpedance amplifier for parallel optical interconnects with data rates up to 28 Gbps. The device is used in conjunction with a 750 μm pitch photodiode array to convert an optical signal into a differential output voltage. An internal circuit provides the photodiode reverse bias voltage and senses the average photocurrent supplied to each photodiode.

The device can be used with pin control or a two-wire serial interface to allow control of the output amplitude, gain, bandwidth and input threshold.

The ONET2804T provides 21 GHz bandwidth, a gain of 10 k Ω , and a received signal strength indicator (RSSI) for each channel.

The part requires a single 3.3 V supply and provides a differential output amplitude of 450 mV_{pp}. It is characterized for operation from –40°C to 100°C temperatures and is available in die form with a 750 μm channel pitch.

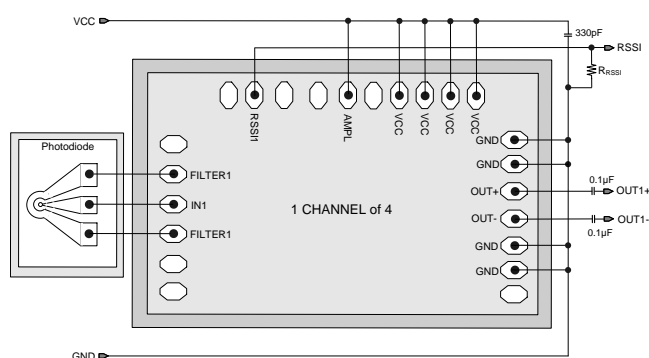
To request a full data sheet, please send an email to: onet2804t_request@ti.com.

Device Information⁽¹⁾

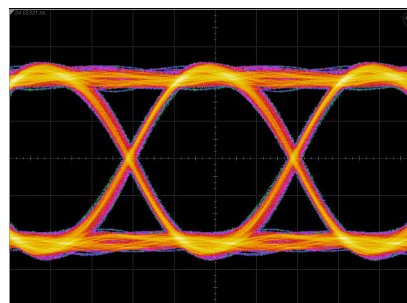
PART NUMBER	PACKAGE	BODY SIZE (NOM)
ONET2804T	Base die in Waffle Pack	3250 μm \times 1450 μm

(1) For all available packages, see the orderable addendum at the end of the datasheet.

4 Simplified Schematic



Eye Diagram



5 Device and Documentation Support

5.1 Trademarks

All trademarks are the property of their respective owners.

5.2 Electrostatic Discharge Caution



These devices have limited built-in ESD protection. The leads should be shorted together or the device placed in conductive foam during storage or handling to prevent electrostatic damage to the MOS gates.

5.3 Glossary

[SLYZ022](#) — *TI Glossary*.

This glossary lists and explains terms, acronyms, and definitions.

6 Mechanical, Packaging, and Orderable Information

The following pages include mechanical, packaging, and orderable information. This information is the most current data available for the designated devices. This data is subject to change without notice and revision of this document. For browser-based versions of this data sheet, refer to the left-hand navigation.

PACKAGING INFORMATION

Orderable Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan (2)	Lead/Ball Finish (6)	MSL Peak Temp (3)	Op Temp (°C)	Device Marking (4/5)	Samples
ONET2804TY	ACTIVE	DIESALE	Y	0	135	Green (RoHS & no Sb/Br)	Call TI	N / A for Pkg Type	-40 to 100		Samples

(1) The marketing status values are defined as follows:

ACTIVE: Product device recommended for new designs.

LIFEBUY: TI has announced that the device will be discontinued, and a lifetime-buy period is in effect.

NRND: Not recommended for new designs. Device is in production to support existing customers, but TI does not recommend using this part in a new design.

PREVIEW: Device has been announced but is not in production. Samples may or may not be available.

OBSOLETE: TI has discontinued the production of the device.

(2) Eco Plan - The planned eco-friendly classification: Pb-Free (RoHS), Pb-Free (RoHS Exempt), or Green (RoHS & no Sb/Br) - please check <http://www.ti.com/productcontent> for the latest availability information and additional product content details.

TBD: The Pb-Free/Green conversion plan has not been defined.

Pb-Free (RoHS): TI's terms "Lead-Free" or "Pb-Free" mean semiconductor products that are compatible with the current RoHS requirements for all 6 substances, including the requirement that lead not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, TI Pb-Free products are suitable for use in specified lead-free processes.

Pb-Free (RoHS Exempt): This component has a RoHS exemption for either 1) lead-based flip-chip solder bumps used between the die and package, or 2) lead-based die adhesive used between the die and leadframe. The component is otherwise considered Pb-Free (RoHS compatible) as defined above.

Green (RoHS & no Sb/Br): TI defines "Green" to mean Pb-Free (RoHS compatible), and free of Bromine (Br) and Antimony (Sb) based flame retardants (Br or Sb do not exceed 0.1% by weight in homogeneous material)

(3) MSL, Peak Temp. - The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.

(4) There may be additional marking, which relates to the logo, the lot trace code information, or the environmental category on the device.

(5) Multiple Device Markings will be inside parentheses. Only one Device Marking contained in parentheses and separated by a "~" will appear on a device. If a line is indented then it is a continuation of the previous line and the two combined represent the entire Device Marking for that device.

(6) Lead/Ball Finish - Orderable Devices may have multiple material finish options. Finish options are separated by a vertical ruled line. Lead/Ball Finish values may wrap to two lines if the finish value exceeds the maximum column width.

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